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EXAMINER

ALI, SYED J

ART UNIT	PAPER NUMBER
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2127

DATE MAILED: 03/17/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/809,201	Applicant(s) ARNOLD ET AL.	
	Examiner Syed J Ali	Art Unit 2195	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 24 November 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 3-52 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 3-52 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>8/19/04</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. This office action is in response to the amendment filed November 24, 2004. Claims 3-52 are presented for examination.
2. The text of those sections of Title 35, U.S. code not included in this office action can be found in a prior office action.

Terminal Disclaimer

3. The terminal disclaimer filed on November 24, 2004 disclaiming the terminal portion of any patent granted on this application which would extend beyond the expiration date of Patent Number 6,446,070 has been reviewed and is accepted. The terminal disclaimer has been recorded.

Claim Rejections - 35 USC § 103

4. **Claims 3-6, 9-14, 16-21, 24, 28-31, 34-39, 41-46, and 49 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bharadhwaj (USPN 6,061,713) in view of Yan et al. (SUPN 6,003,065) (hereinafter Yan).**
5. As per claim 3, Bharadhwaj teaches the invention as claimed, including a method performed on a processor operatively coupled to a collection of servers which enables a client associated with the processor to dynamically distribute a task to a server, the method comprising the steps of:

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selecting a server to process the task (col. 3 lines 20-33; col. 7 lines 10-17);
forming a task request from parameters and data (col. 3 lines 63-65);
sending the task request to the selected server (col. 7 lines 18-25), which generates results (col. 7 line 61 - col. 8 line 13); and

receiving the results back from the selected server (col. 7 line 61 - col. 8 line 13).

6. Yan teaches the invention as claimed, including the server downloading any needed executable byte code (col. 19 lines 23-53), and invoking a generic compute technique capable of executing the task request on the selected server (col. 7 lines 9-22; col. 19 lines 54-64).

7. It is would have been obvious to one of ordinary skill in the art to combine Bharadhwaj and Yan since the method of Bharadhwaj, which is directed to simplification of the coordination process between clients and servers (col. 1 lines 50-53), would benefit greatly from the distributed processing of applications that is set forth by Yan. Specifically, Bharadhwaj presents a means of allowing a client to locate an optimal server to perform a request, which is substantially similar to the distributed processing method presented by Yan. The differences lie in the selection criteria set forth by Bharadhwaj, which consider a greater number of factors than the particular capabilities of each server, as in Yan. The combination thereof not only allows the interoperability of a client-server architecture across varying communication protocols, but across varying operating environments. That is, Yan presents a virtual machine architecture that dynamically downloads the needed virtual machine instructions, a so-called “write once run everywhere” model.

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8. As per claim 4, Bharadhwaj teaches the invention as claimed, including the method of claim 3, wherein the processor is operatively coupled to a computer system having a primary storage device, a secondary storage device, a display device, and an input/output mechanism (col. 2 line 65 - col. 3 line 7).

9. As per claim 5, Bharadhwaj teaches the invention as claimed, including the method of claim 3, wherein the task is developed in a programming language and environment compatible with each of the server computers (col. 1 lines 26-39).

10. As per claim 6, Bharadhwaj teaches the invention as claimed, including the method of claim 3, wherein the server is selected from a plurality of heterogeneous computer systems (col. 1 lines 25-39).

11. As per claim 9, Bharadhwaj teaches the invention as claimed, including the method of claim 3, wherein selecting the server comprises selecting the server based on the overall processing load distribution among the collection of servers (col. 6 lines 32-39).

12. As per claim 10, Bharadhwaj teaches the invention as claimed, including the method of claim 6, wherein the selected server has the lowest load characteristic compared with average load characteristic of the servers over a predetermined time period (col. 6 lines 32-39).

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13. As per claim 11, Bharadhwaj teaches the invention as claimed, including the method of claim 3, wherein selecting the server comprises selecting the server based on the specialized computing capabilities of each server (col. 4 lines 52-58).

14. As per claim 12, Bharadhwaj teaches the invention as claimed, including the method of claim 11, wherein the specialized computing capabilities include a capability to render images (col. 6 lines 32-39).

15. As per claim 13, Yan teaches the invention as claimed, including the method of claim 3, wherein the sending step further comprises the substeps of:

determining if code related to the requested task is present on the selected server (col. 19 lines 31-34); and

downloading the code onto the selected server when the code is not present on the selected server (col. 19 lines 25-31).

16. As per claim 14, Bharadhwaj teaches the invention as claimed, including the method of claim 3, wherein the sending step further comprises:

providing the task as a parameter to the generic compute method (col. 3 lines 63-65).

17. As per claim 16, Bharadhwaj teaches the invention as claimed, including the method of claim 3, wherein the results are used for further processing on the client (col. 7 line 61 - col. 8 line 13).

18. As per claim 17, Bharadhwaj teaches the invention as claimed, including the method of claim 3, wherein the results comprise an object (col. 5 lines 32-52).

19. As per claim 18, Bharadhwaj teaches the invention as claimed, including a method performed on a processor operatively coupled to a collection of servers which enables a server associated with the processor to dynamically receive and process a task from a client computer wherein the task is in an executable programming language compatible with each of the server computers, the method comprising the steps of:

assembling parameters and data from a task request into a task (col. 3 lines 63-65);
the server generating results (col. 7 lines 18-25; col. 7 line 61 - col. 8 line 13); and
returning results to the client (col. 7 line 61 - col. 8 line 13).

20. Yan teaches the invention as claimed, including:

downloading any needed executable byte code (col. 19 lines 23-53); and
invoking a generic compute method on the server, which is capable of processing a plurality of types of tasks, which executes the task (col. 7 lines 9-22; col. 19 lines 54-64).

21. As per claim 19, Bharadhwaj teaches the invention as claimed, including the method of claim 18, wherein the processor is operatively coupled to a computer system having a primary storage, a secondary storage device, a display device, and an input/output mechanism (col. 2 line 65 - col. 3 line 7).

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22. As per claim 20, Bharadhwaj teaches the invention as claimed, including the method of claim 18, wherein the task is developed in a programming language compatible with each of the server computers (col. 1 lines 26-39).

23. As per claim 21, Yan teaches the invention as claimed, including the method of claim 18, wherein the task is developed using the Java programming language and environment (col. 7 line 1; col. 7 lines 9-22).

24. As per claim 24, Yan teaches the invention as claimed, including the method of claim 18, wherein the assembling step further comprises:

determining if types related to the task are available on the server (col. 19 lines 31-34);

when the types are not available on the server, downloading the types onto the server from a location as indicated by the parameters provided by the client (col. 19 lines 25-31); and

executing the task based upon the data and parameters provided by the client (col. 19 lines 54-64).

25. As per claims 28-31, 34-39, and 41-42, Bharadhwaj teaches the invention as claimed, including a computer readable medium containing instructions for controlling a computer system comprising a collection of servers to perform the method of claims 3-17, respectively (col. 2 line 65- col. 3 line 7).

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26. As per claims 43-46 and 49, Bharadhwaj teaches the invention as claimed, including a computer readable medium containing instructions for controlling a computer system comprising a collection of servers to perform the method of claims 18-21 and 24, respectively (col. 2 line 65 - col. 3 line 7).

27. **Claims 7-8, 22-23, 25-26, 32-33, 47-48, and 50 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bharadhwaj in view of Yan in view of Moore et al. (USPN 6,282,581) (hereinafter Moore).**

28. As per claim 7, Moore teaches the invention as claimed, including the method of claim 5, wherein the environment includes a remote procedure call subsystem (col. 7 line 39 - col. 8 line 35).

29. It would have been obvious to one of ordinary skill in the art to combine Bharadhwaj and Yan with Moore since in a distributed computing environment, different computers may be running different platforms or have incompatible communication protocols. Moore teaches a communication protocol, remote method invocation, which is platform independent. This would allow distributed computing for a number of different types of systems to interact, including as systems evolve and change (Moore, col. 1 line 45 - col. 2 line 49).

30. As per claim 8, Moore teaches the invention as claimed, including the method of claim 7, wherein the remote procedure call subsystem is the Remote Method Invocation [RMI] system (col. 8 line 36 - col. 9 line 52).

31. As per claim 22, Moore teaches the invention as claimed, including the method of claim 21, wherein the environment includes a remote procedure call subsystem (col. 7 line 39 - col. 8 line 35).

32. As per claim 23, Moore teaches the invention as claimed, including the method of claim 22, wherein the remote procedure call subsystem is the Remote Method Invocation [RMI] system (col. 8 line 36 - col. 9 line 52).

33. As per claim 25, Moore teaches the invention as claimed, including the method of claim 24, wherein the determining step and the downloading steps are performed by a remote procedure call [RPC] subsystem (col. 7 line 39 - col. 8 line 35).

34. As per claim 26, Moore teaches the invention as claimed, including the method of claim 25, wherein the determining step is performed by a Remote Method Invocation [RMI] type of remote procedure call subsystem (col. 8 line 36 - col. 9 line 52).

35. As per claims 32-33, Bharadhwaj teaches the invention as claimed, including a computer readable medium containing instructions for controlling a computer system comprising a collection of servers to perform the method of claims 7-8, respectively (col. 2 line 65 - col. 3 line 7).

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36. As per claims 47-48 and 50, Bharadhwaj teaches the invention as claimed, including a computer readable medium containing instructions for controlling a computer system comprising a collection of servers to perform the method of claims 22-23 and 25, respectively (col. 2 line 65 - col. 3 line 7).

37. Claims 15, 27, 40, and 52 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bharadhwaj in view of Yan in view of Pal et al. (USPN 6,219,675) (hereinafter Pal).

38. As per claim 15, Pal teaches the invention as claimed, including the method of claim 3 further comprising the step of indicating to the server that results from a computed task should be stored in a result cache on the selected server for subsequent tasks to use (col. 7 line 47 - col. 8 line 11).

39. It would have been obvious to one of ordinary skill in the art to combine Bharadhwaj and Yan with Pal since in the case that subsequent tasks perform similar operations, or may perform additional work on an object, storing the result in a cache on the server would reduce the required execution time. Rather than distribute the task and parameters to the server again, the server can simply pull the result from cache. This reduces the communication time associated with a network, and is especially beneficial since the RPC mechanism requires that all processing be done remotely.

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40. As per claim 27, Pal teaches the invention as claimed, including the method of claim 18, further comprising the substep of storing the results from the task in a cache if a subsequent task will use the results (col. 7 line 47 - col. 8 line 11).

41. As per claim 40, Bharadhwaj teaches the invention as claimed, including a computer readable medium containing instructions for controlling a computer system comprising a collection of servers to perform the method of claim 15 (col. 2 line 65 - col. 3 line 7).

42. As per claim 52, Bharadhwaj teaches the invention as claimed, including a computer readable medium containing instructions for controlling a computer system comprising a collection of servers to perform the method of claim 27 (col. 2 line 65 - col. 3 line 7).

Response to Arguments

43. **Applicant's arguments with respect to claims 3-52 have been considered but are moot in view of the new grounds of rejection.**

Conclusion

44. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Syed J Ali whose telephone number is (571) 272-3769. The examiner can normally be reached on Mon-Fri 8-5:30, 2nd Friday off.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Meng-Ai T An can be reached on (571) 272-3756. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Syed Ali
March 14, 2005



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